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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/552,996	10/10/2006	Hiroshi Matsuda	00684.102864.	5856

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EXAMINER	
SAHLE, MAHIDERE S	
ART UNIT	PAPER NUMBER
2873	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/552,996	MATSUDA ET AL.	
	Examiner	Art Unit	
	MAHIDERE S. SAHLE	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 April 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,13,15 and 17-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,13,15 and 17-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-9, 13, 15 and 17-21 are pending in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1-4, 6-9, 13, 15, 17-18 and 20-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (USPG Pub No. 2003/0048521) in view of Akins et al. (USP No. 6,166,787).

Regarding claim 1, Ikeda et al. discloses a display apparatus (paragraph 0032, line 1), comprising: a substrate on which a plurality of closed spaces are two-dimensionally disposed along a surface of said substrate (paragraph 0032, lines 3-6), a plurality of light-absorbing particles (5) contained in each of the closed spaces (paragraph 0032, lines 6-9), and a reflection surface for reflecting light which enters each of the closed spaces (paragraph 0068, lines 5-6), wherein said particles (5) are moved in each closed space (paragraph 0042), between a first position at which they are diffused to cover said reflection surface and a second position at which they are collected to expose said reflection surface (see figures 4A-B), to change an intensity of reflected light so as to provide a bright display state and a dark display state (paragraph

0043), wherein the exposed reflection surface diffuse-reflects incident light with a directivity when said particles are located at the second position (paragraph 0068, lines 8-11). Ikeda et al. discloses the claimed invention except for wherein a light intensity of the diffuse reflection with the directivity of the exposed reflection surface has such an angular distribution that: (1) an amount of reflected light emitted from the reflection surface toward the second position at which said particles are collected is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light emitted from the reflection surface toward positions other than the position at which said particles are collected is larger than that of reflected light emitted from the reflection surface toward the position at which said particles are collected. In the same field of endeavor, Akins et al. discloses wherein a light intensity of the diffuse reflection with the directivity of the exposed reflection surface has such an angular distribution that: (1) an amount of reflected light emitted from the reflection surface toward the second position at which said particles are collected is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface (col. 7, lines 26-31), and (2) an amount of reflected light emitted from the reflection surface toward positions other than the position at which said particles are collected is larger than that of reflected light emitted from the reflection surface toward the position at which said particles are collected (col. 7, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the light intensity of the diffuse reflection with the directivity of the exposed reflection surface has

such an angular distribution that: (1) an amount of reflected light emitted from the reflection surface toward the second position at which said particles are collected is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light emitted from the reflection surface toward positions other than the position at which said particles are collected is larger than that of reflected light emitted from the reflection surface toward the position at which said particles are collected of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 2, Ikeda et al. discloses a display apparatus (paragraph 0032, line 1), comprising: a substrate on which a plurality of closed spaces are two-dimensionally disposed along a surface of said substrate (paragraph 0032, lines 3-6), a plurality of light-absorbing particles (5) contained in each of the closed spaces (paragraph 0032, lines 6-9), a partition wall (3) for dividing the closed spaces into each of the closed spaces in a direction along the surface of the substrate (see figure 1, paragraph 0044, lines 1-2), and a reflection surface for reflecting light which enters each of the closed spaces (paragraph 0068, lines 5-6), wherein said particles (5) are moved in each closed space (paragraph 0042), between a first position at which they are diffused to cover said reflection surface and a second position at which they are collected to expose said reflection surface (see figures 4A-B), to change an intensity of reflected light so as to provide a bright display state and a dark display state (paragraph 0043), the exposed reflection surface diffuse-reflects incident light with a directivity when said particles are located at the second position (paragraph 0068, lines 8-11).

Ikeda et al. discloses the claimed invention except for a light intensity of the diffuse reflection with the directivity of the exposed reflection surface has such an angular distribution that: (1) an amount of reflected light emitted from the reflection surface toward the partition wall is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light emitted from the reflection surface toward portions other than the partition wall is larger than that of reflected light emitted form the reflection surface toward the partition wall. In the same field of endeavor, Akins et al. discloses a light intensity of the diffuse reflection with the directivity of the exposed reflection surface has such an angular distribution that: (1) an amount of reflected light emitted from the reflection surface toward the partition wall is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface (col. 7, lines 26-31), and (2) an amount of reflected light emitted from the reflection surface toward portions other than the partition wall is larger than that of reflected light emitted form the reflection surface toward the partition wall (col. 7, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with a light intensity of the diffuse reflection with the directivity of the exposed reflection surface has such an angular distribution that: (1) an amount of reflected light emitted from the reflection surface toward the partition wall is smaller than that thereof in the case where the reflection surface is an isotropic diffuse reflection surface, and (2) an amount of reflected light emitted from the reflection surface toward portions other than the partition wall is larger than that of reflected light emitted form the reflection

surface toward the partition wall of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 3, Ikeda et al. discloses wherein the reflection surface has a portion close to the second position at which the particles (5) are collected (paragraph 0043, lines 4-9). Ikeda et al. discloses the claimed invention except for the directivity at the portion is stronger than those at other portions of the reflection surface. In the same field of endeavor, Akins et al. discloses the directivity at the portion is stronger than those at other portions of the reflection surface (col. 7, lines 18-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the directivity at the portion is stronger than those at other portions of the reflection surface of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 4, Ikeda et al. discloses the claimed invention except for wherein the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the second position at which the particles are collected so as to be localized toward a direction apart from the second position and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the second position. In the same field of endeavor, Akins et al. discloses wherein the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the second position at which the particles are collected so as

to be localized toward a direction apart from the second position and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the second position or the partition wall (see figure 1, col. 7, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the second position at which the particles are collected so as to be localized toward a direction apart from the second position and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the second position or the partition wall of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 6, Ikeda et al. discloses wherein the reflection surface is substantially a mirror surface in an area close to the second position at which the particles are collected (paragraph 0074, lines 11-13), and is a diffuse reflection surface in an area other than the area close to the second position (paragraph 0068, lines 5-11).

Regarding claim 7, Ikeda et al. discloses wherein at least a second portion of the reflection surface in an area close to the position at which the particles are collected is inclined upward (see figures 2C-D, 4B).

Regarding claim 8, Ikeda et al. discloses wherein at least a portion of the substrate is transparent (paragraph 0040, lines 1-2). Ikeda et al. discloses the claimed invention except for the reflection surface is semitransparent, and a light source is

disposed below the substrate. In the same field of endeavor, Akins et al. discloses the reflection surface is semitransparent (col. 7, lines 20-22), and a light source is disposed below the substrate (col. 7, lines 22-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with the reflection surface is semitransparent, and a light source is disposed below the substrate of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 9, Ikeda et al. discloses wherein the apparatus further comprises a front scattering layer disposed on an observer's side (paragraph 0068, lines 5-11).

Regarding claim 13, Ikeda et al. discloses wherein in each of the closed spaces (paragraph 0044, lines 1-2). Ikeda et al. discloses the claimed invention except for a color filter is disposed on the reflection surface. In the same field of endeavor, Akins et al. discloses a color filter (20) is disposed on the reflection surface (16) (col. 7, lines 18-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with a color filter is disposed on the reflection surface of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 15, Ikeda et al. discloses wherein in each of the closed spaces (paragraph 0044, lines 1-2), and the transparent electrode (see figure 3, paragraph 0040, lines 1-2). Ikeda et al. discloses the claimed invention except for a color filter is disposed between the reflection surface and the transparent electrode. In the same field

of endeavor, Akins et al. discloses a color filter (20) is disposed between the reflection surface (16) (col. 7, lines 18-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. with a color filter is disposed between the reflection surface of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 17, Ikeda et al. discloses wherein the reflection surface (6) has a portion close to the partition wall (3), and the directivity at the portion is stronger than those at other portions of the reflection surface (see figure 4A).

Regarding claim 18, Ikeda et al. discloses the claimed invention except for wherein the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the partition wall so as to be localized toward a direction apart from the second position and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the partition wall. In the same field of endeavor, Akins et al. discloses wherein the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the partition wall so as to be localized toward a direction apart from the second position and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the partition wall (see figure 1, col. 7, lines 26-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made

to provide the display apparatus of Ikeda et al. with wherein the angular distribution of the intensity of light from the reflection surface is such that it is asymmetrical with respect to a direction of a normal to the reflection surface in an area close to the partition wall so as to be localized toward a direction apart from the second position and that it is substantially symmetrical with respect to the normal direction in an area other than the area close to the partition wall of Akins et al. for the purpose of enhancing a viewer's perceived brightness of the display (col. 1, lines 9-10).

Regarding claim 20, Ikeda et al. discloses wherein the reflection surface is substantially a mirror surface in an area close to the partition wall, and is a diffuse reflection surface in an area other than the area close to the partition wall (see figures 3-4B, paragraph 0068).

Regarding claim 21, Ikeda et al. discloses wherein at least a portion of the reflection surface in an area close to the partition wall is inclined upward (see figures 3-4B).

Claims **5 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikeda et al. (USPG Pub No. 2003/0048521) in view of Akins et al. (USP No. 6,166,787), as applied to claim 4 above, and further in view of Iwai et al. (JPO 11-109392).

Regarding claim 5, Ikeda et al. in view of Akins et al. discloses particles (5) (see figure 1 of Ikeda et al. reference). Ikeda et al. in view of Akins et al. discloses the claimed invention except for wherein the reflection surface is divided into a plurality of reflection areas different in reflection characteristic from each other, and the angular

distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity with an increasing distance of the particles from the second position at which the particles are collected and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance. In the same field of endeavor, Iwai et al. discloses the reflection surface (8a) is divided into a plurality of reflection areas different in reflection characteristic from each other (see figure 12), and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance (see figure 12, paragraphs 0082-0083). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. in view of Akins et al. with the reflection surface is divided into a plurality of reflection areas different in reflection characteristic from each other, and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance of Iwai et al. for the purpose of obtaining a wide angle of visual field and improving reflectance, contrast and color purity (abstract of Yoshio et al. reference).

Regarding claim 19, Ikeda et al. in view of Akins et al. discloses particles (5) (see figure 1 of Ikeda et al. reference). Ikeda et al. in view of Akins et al. discloses the claimed invention except for wherein the reflection surface is divided into a plurality of reflection areas different in reflection characteristic from each other, and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity with an increasing distance of the particles from the partition wall, and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance. In the same field of endeavor, Iwai et al. discloses the reflection surface (8a) is divided into a plurality of reflection areas different in reflection characteristic from each other (see figure 12), and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity and that it is changed stepwise or continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance (see figure 12, paragraphs 0082-0083). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the display apparatus of Ikeda et al. in view of Akins et al. with the reflection surface is divided into a plurality of reflection areas different in reflection characteristic from each other, and the angular distribution of the intensity of light from each of the divided reflection areas is such that it is changed stepwise or continuously from a strong level to a weak level with respect to the directivity and that it is changed stepwise or

continuously from a large level to a small level or no level with respect to the asymmetry with the increasing distance of Iwai et al. for the purpose of obtaining a wide angle of visual field and improving reflectance, contrast and color purity (abstract of Yoshio et al. reference).

Response to Arguments

Applicant's arguments filed 04/24/09 have been fully considered but they are not persuasive.

Applicant argues that the combination of Ikeda and Akins is improper due to the different type of display devices. Both Ikeda and Akins are in the same field of endeavor, which in this case is the field of displays. Thus, applying teachings from one reference into the device of the other can produce obvious variants or improvements to the display devices. Therefore, it would be obvious to one skilled in the art to reconstruct Ikeda's display device using the teachings of Akins.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAHIDERE S. SAHLE whose telephone number is (571)270-3329. The examiner can normally be reached on Monday thru Thursday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSS
5/10/2009

/Jessica T Stultz/
Primary Examiner, Art Unit 2873